

09/856,728

B<sup>1</sup>

19. (AMENDED) A hysteresis unit (1, 23) comprising a magnetic north pole (4) around an axis of rotation (14), alternating at a distance in a peripheral direction (15) from a south pole (5) situated in a magnet body (2, 3) having a magnet coil (6), a movable hysteresis ring (16) having a slight play relative to said poles (4, 5) is connected with a rotor (17), and peripheral surfaces of the north pole (4) and south pole (5) lie on the same circle and opposite to an adjacent peripheral surface of said hysteresis ring (16), the moveable hysteresis ring (16) surrounds said north pole (4) and said south pole (5), said poles being formed by pole fingers (4, 5) which, departing from axial front walls of said magnet body (2, 3) are aligned upon each other and are spaced from each other a greater distance than from said hysteresis ring (16) and said hysteresis ring (16) abuts by a peripheral surface on said rotor (17), and wherein said pole fingers (4, 5) are interconnected by a non-magnetizable material.

20. (AMENDED) The hysteresis unit (1, 23) according to claim 19, wherein said non-magnetizable material is preferably brass, which has good heat conductivity.

21. (AMENDED) The hysteresis unit (1, 23) according to claim 19, wherein said pole fingers (4, 5) are supported by and shrunk upon a connecting ring (27).

22. (AMENDED) The hysteresis unit (1) according to claim 19, wherein intermediate spaces between said pole fingers (4, 5) are filled with a non-magnetizable filling component (28).

23. (AMENDED) The hysteresis unit (1, 23) according to claim 19, wherein it is designed as a clutch by an outer part (25) with said pole finger (5) of said magnet body (2) being separated from the latter by a thin annular gap (26) and said second magnet body (3) sitting with a small gap (29) rotatably relative to said magnet body (2) upon a rotatable part to be coupled while the first magnet body (2) is mounted fastened on a housing.

09/856,728

24. (NEW) An electromagnetic hysteresis unit (1, 23) comprising:

B<sup>2</sup> a magnet body (2, 3) having a magnet coil and multiple magnetic north poles (4) arranged alternatively (15) with multiple magnetic south poles (5) spaced at a tangential distance from each other around an axis of rotation (14) with peripheral surfaces of the north poles (4) and south poles (5) lie on the same circle;

a movable hysteresis ring (16) having slight play relative to said magnetic north and south poles (4, 5) and is connected to a rotor (17), said hysteresis ring (16) surrounds said north poles (4) and said south poles (5), said poles are formed by pole fingers (4, 5) which extend from axial facing surfaces of said magnet body (2, 3) and are directed towards each other having a greater distance from each other than from said hysteresis ring (16) and said hysteresis ring (16) abuts a peripheral surface on said rotor (17); and

wherein said rotor (17) consists of a material having good heat conductivity in order to improve the heat conduction, that said magnet body (2, 3) is constructed in two parts and divided in the area of the magnet coil (6), that said rotor (17) is firmly mounted on a shaft (12) that is supported in said magnet body (2, 3) by means of two ball bearings (10, 11), a collar (22) of said rotor (17) and a guard ring (21) mounted on said shaft (12) forming axial stops on which abuts a respective inner ring of one of said ball bearings (10, 11) while outer rings of said ball bearings abut on axial stops each formed by one of said two parts of said magnet body (2, 3) and that said magnet body is thick walled, the pole fingers being integral in the two parts of said magnet body and being tapered to their free end in axial direction relative to their radial and tangential extension and being tapered to a point relative to their radial expansion.

09/856,728

B2  
Cmt.  
25. (NEW) The hysteresis unit (1, 23) according to claim 24, wherein said rotor (17) has cooling devices (18).

26. (NEW) The hysteresis unit (1, 23) according to claim 24, wherein said pole fingers (4, 5) overlap in peripheral direction (15).

27. (NEW) The hysteresis unit (1, 23) according to claim 24, wherein said magnet body (2) is fastened to a housing and the current supply for supplying electric current to the magnetic coil (7) is shifted through a free space (19) formed between said pole fingers (4, 5), said rotor being pot-shaped and defining an opening on one side.

28. (NEW) An electromagnetic hysteresis unit (1, 23) comprising:  
a magnet body (2, 3) constructed by a first part and a second part having a magnet coil (6) positioned between the first and second parts to induce a north pole in the first part and a south pole in the second part;

a plurality of first pole fingers having the electromagnetically induced north pole extending from a first axial face of the first part of the magnet body being alternately circumferentially arranged with a plurality of second pole fingers having the electromagnetically induced south pole extending from a second axial face of the second part of the magnet body;

a shaft supporting the first and second parts of the magnet body (2, 3) via a respective first and second bearings enabling relative rotational movement between the shaft and the magnet body;

a rotor (17) fixed to the shaft substantially surrounds the first and second parts of the magnet body, the rotor (17) having an inner peripheral face supporting a movable hysteresis ring (16) having a slight spacing relative to an outer peripheral face of the magnet body defined by the alternately circumferentially arranged first and second pole fingers of said first and second parts of the magnet body;

09/856,728

B<sup>2</sup>  
mcd.

the alternately circumferentially arranged first and second pole fingers (4, 5) which extend from respective axial faces of said magnet body (2, 3) are aligned at an equal radial distance from the hysteresis ring and are interlaced towards each other and spaced from a respective adjacent pole finger a greater distance than the slight spacing from said hysteresis ring (16); and

wherein the magnet body (2, 3) is radially divided by the magnet coil (6) and both the first and second parts being centered relative to each other and interconnected via a centering ring (8).

29. (NEW) The electromagnetic hysteresis unit (1, 23) as set forth in claim 28 further comprising a collar (22) portion of said rotor (17) abutting an inner ring of the first bearing (10) to form a first axial stop, and a guard ring (21) mounted on said shaft (12) abuts an inner ring of the second bearing (11) while outer rings of said first and second bearings abut on axial stops each formed by said respective first and second parts of the magnet body (2, 3).

30. (NEW) The electromagnetic hysteresis unit (1, 23) as set forth in claim 29 wherein the first and second pole fingers are integrally connected by a base portion to the respective first and second parts of said magnet body and axially and radially taper to a free end edge which is narrower than the base portion.

31. (NEW) The electromagnetic hysteresis unit (1, 23) as set forth in claim 28 wherein the first and second parts of the magnet body (2, 3) are secured together by an axially aligned bolt spaced a radial distance from the axis and extending through the first and second parts of the magnet body.